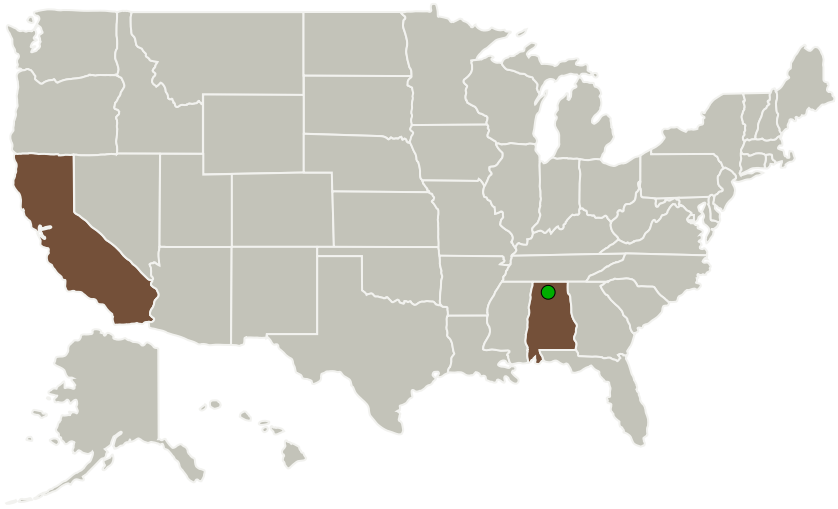
Novel Process Technologies for Disinfection of Potable Water, Phase I

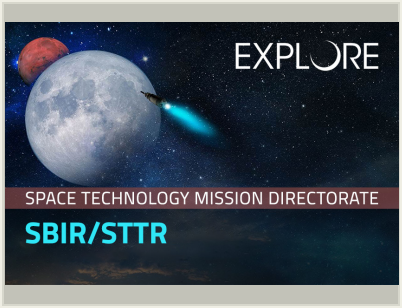
Completed Technology Project (2011 - 2011)

Project Introduction

KWJ is proposing a microfabricated multichannel ozone source, and will evaluate several designs for efficiency of ozone production in Phase I. The voltage requirements to produce a sustainable plasma discharge in the microchannel depend on the field strength required to cause the electrical breakdown of gas, and can be minimized by reducing the electrode gap as well as by impedance matching to optimize the power transfer to the ozone generation reaction. The proposed innovation combines microplasma ozone generation with a microreactor platform to provide a low energy-cost, highly efficient and compact sterilization system using ambient air for ozone production. Our vision includes efficient, scalable micro-reactors that are safe, need no handling of chemicals, are low power and effective for direct use in NASA applications to disinfect potable water. The design incorporates closed-loop process flows with no chemical handling required by the crew. The technology will produce spin off products to clean air, water, and surfaces for NASA as well as commercial clients.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
KWJ Engineering, Inc	Lead Organization	Industry	Newark, California
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	California

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Summary: Novel Process Technologies for Disinfection of Potable Water, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/138379)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

KWJ Engineering, Inc

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Joseph R Stetter

Co-Investigator:

Jospeh Stetter

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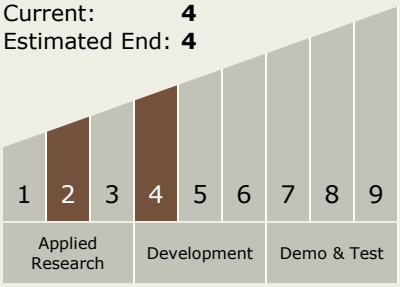
Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - TX06.1.2 Water Recovery and Management

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System